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KAREENA
PRIVATE HOSPITAL



Prince of Wales
PRIVATE HOSPITAL



SOS
SYDNEY
ORTHOPAEDIC
SPECIALISTS

Patient

- “My NCS say I have CTS!!”
- “I’ve got RSI!!”
- “My Chiro says its from my neck!”
- My Response “ Forget everyone else – I’m interested in What you say!”
- The History & Examination is critical
- The history is very variable.

Aim CTS History

- 1. Confirm Diagnosis – Usually Obvious
- 2. Assess Severity
- 3. Look for treatable causes

CTS History

- “How many times do you wake at night”
 - “Waking & Shaking”
- Morning exacerbation of symptoms
- Numbness may involve ALL fingers
- Numbness is sometimes perceived as swelling

CTS History

- Pain radiates to:
 - Forearm & elbow 25% cases
 - Shoulder in 5% cases
- Daytime symptoms when Holding:
 - Steering wheel,
 - Book ,
 - Phone

Why worse at Night??

- Fluid shift to upper limb overnight ~ 50mls
- Wrist Postures – Flexion / extension



- Alcohol → Sleep Apnoea → Hypoxia

CTS Severity

- VARIABLE v CONSTANT symptoms
- Variable = Compression
 - Waking multiple times “Can’t sleep”
- Constant = Damage (Too common!!)
 - Constant Numbness
 - Loss dexterity
 - Weakness unreliable
- Duration of Symptoms eg 10 – 20 years !!

Is there a Treatable cause for CTS?

- Weight gain (BMI – Best Predictor for CTS)
- Undiagnosed Diabetes / Hypothyroid
- Dramatic change in activity

CTS

- Many factors can't be changed
 - Eg Age ,
 - Sex 3:1 Female,
 - FH

Inflammatory Arthritis

- Uncommon overall CTS pts
- Sudden onset Severe symptoms eg 3 weeks
- Bilateral

- Last 10 pts with “Work Overuse”
 - 3 Psoriatic arthritis , 1 RA, 3 Ganglions

Psoriatic Arthritis

- Commonest missed diagnosis
- Rash 7%
- Nail Changes 60%



Pitting



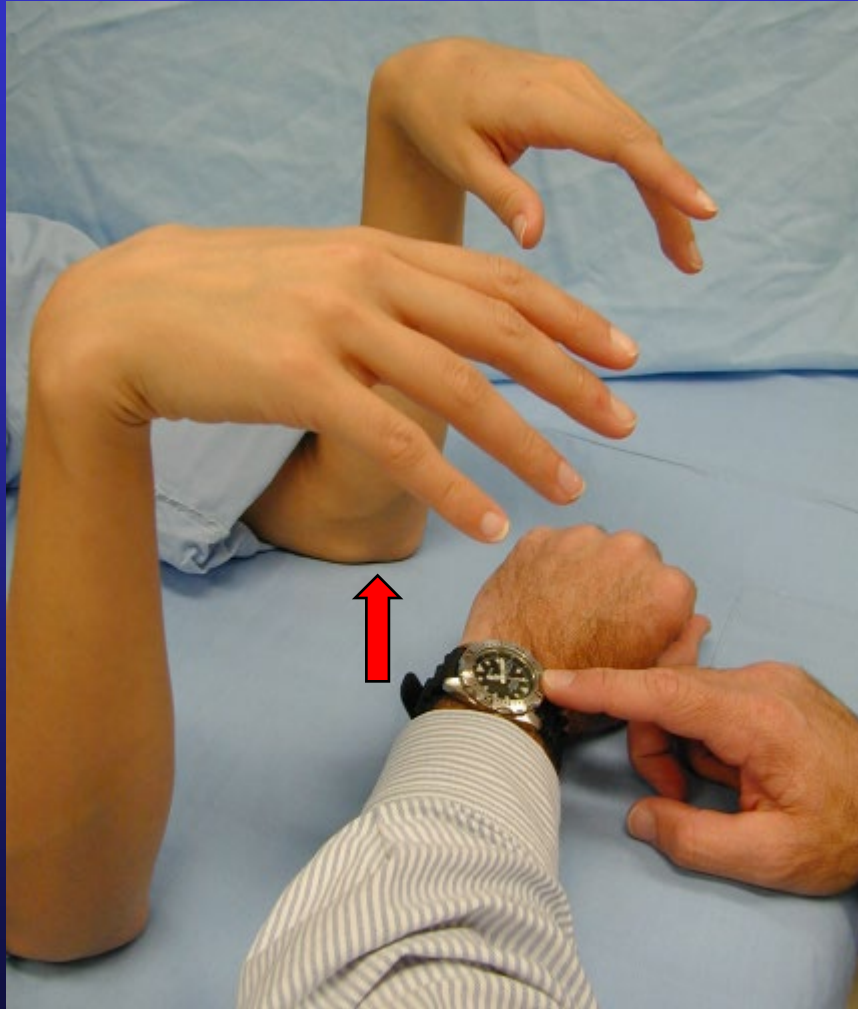
Onycholysis

Median N. Compression Test



- 30 Seconds
- Positive
 - R = 15
 - L = 25

Phalen's Test



- Don't push wrists
- 60 seconds
- Beware elbow pressure on Ulnar nerve

My Interest in CTS

- 1st Endoscopic CTR in 1991
- > 200 CTD / yr
 - ECTR >> Open
- I occasionally experience CTS
 - 2 glasses wine – rare
 - Wingfoiling



A Life Changing Case

- ~ 2000
- 51 F Clerical worker (Computer user)
- 130kg
- Diabetic 5 years
- Base of Thumb & STT OA
- Perimenopausal
- FH - CTS



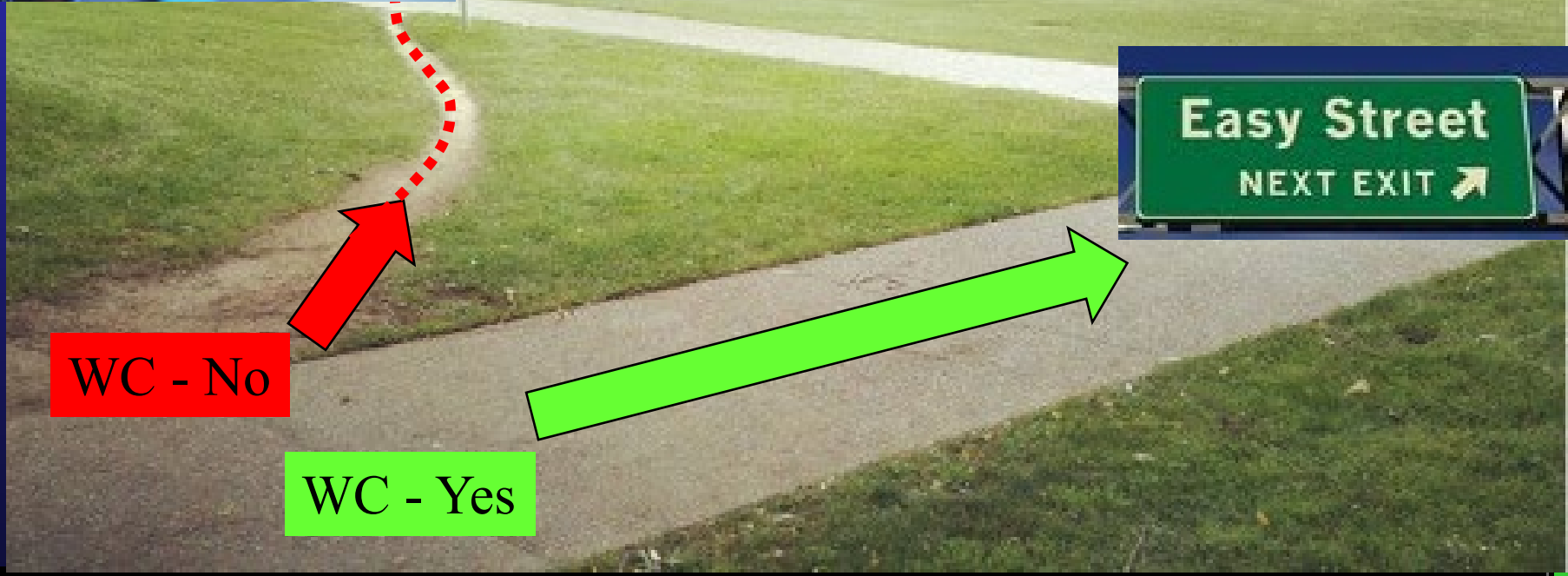
My Disbelief

- Workers Comp. due to **“work overuse”** accepted!!



Wot do you mean its
Not workers comp!!

Path of Least resistance



WC - No

WC - Yes



“When exactly can CTS be considered Work-related?”

A Literature Review by POW Hand therapist



Sonja Falkiner & Stuart Myers

A.N.Z J. Surg. 2002; 72: 204 – 209

Work Related - True

- High Repetition +
- High Load +
- Either
 - Cold Environment or
 - Vibration stress

Vibration



Timber cutters



Motor cycle riders

“Overuse” v “Use”

Has implications for Treatment

Rest v Fitness Training



Computer Use

- 2,465 Swedish workers
- Incidence CTS with Computer use
- < 1 hr / day ... 5%
- 4 hrs /day ... 4%
- 8 hrs /day ... 3%
- Type MORE!!!



Why a Nerve
Conduction study is
NOT necessary for
Typical CTS

USA Practice Analysis 2016

- 63000 patients who underwent CT release,
- 58% had preoperative NCS.

Utilization of Preoperative
Electrodiagnostic Studies for Carpal
Tunnel Syndrome: An Analysis of
National Practice Patterns

Erika D. Sears MD, MS * †  , Peter R. Swiatek BA ‡, Hechuan Hou MS §,
Kevin C. Chung MD, MS || ¶

The Journal of Hand Surgery
Volume 41, Issue 6, June 2016, Pages 665-672.e1

USA Practice Analysis 2016

- NCS caused:
 - Delay to Surgery 36% longer 135 days v 183 days
 - Additional Cost -additional visit, \$996 greater total costs
- NCS did not confer benefit to treatment outcome

Utilization of Preoperative
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2016 AAOS Clinical Practice Guidelines

- NCS No longer required routinely for CTS prior to recommending Sx
- How did this effect Practice??

ASSH Surgeon Survey 2022

- 26% require NCS Before consultation
- 56% Routinely order NCS
- Reasons
 - Unclear Diagnosis 97%
 - Workers Comp 82%
 - Grading Severity 72%
- 43% Unaware of Guidelines

Ultrasound in CTS

- $< / = 10\text{mm}_2 = \text{Normal}$
- $> 15\text{mm} = \text{Pathognomonic of CTS}$
- Loss of “fascicular detail” in median nerve
 - How often is that commented upon??
- Problem – How long does it take for test to become +ve??

Ultrasound in CTS

- Ultrasound Course for Hand Surgeons
- How often does it change your practice??
- Almost NEVER!!!!

Synovial Biopsy in CTS

- 177 Wrists
- Tenosynovitis uncommon < 10%
- Oedema common 85%
- Vascular sclerosis 98%

Fuchs et al J Hand Surgery 1991 July;16 (4):753 - 8

Why NSAIDS???

- Why when pathology in

Idiopathic CTS is

Non - inflammatory

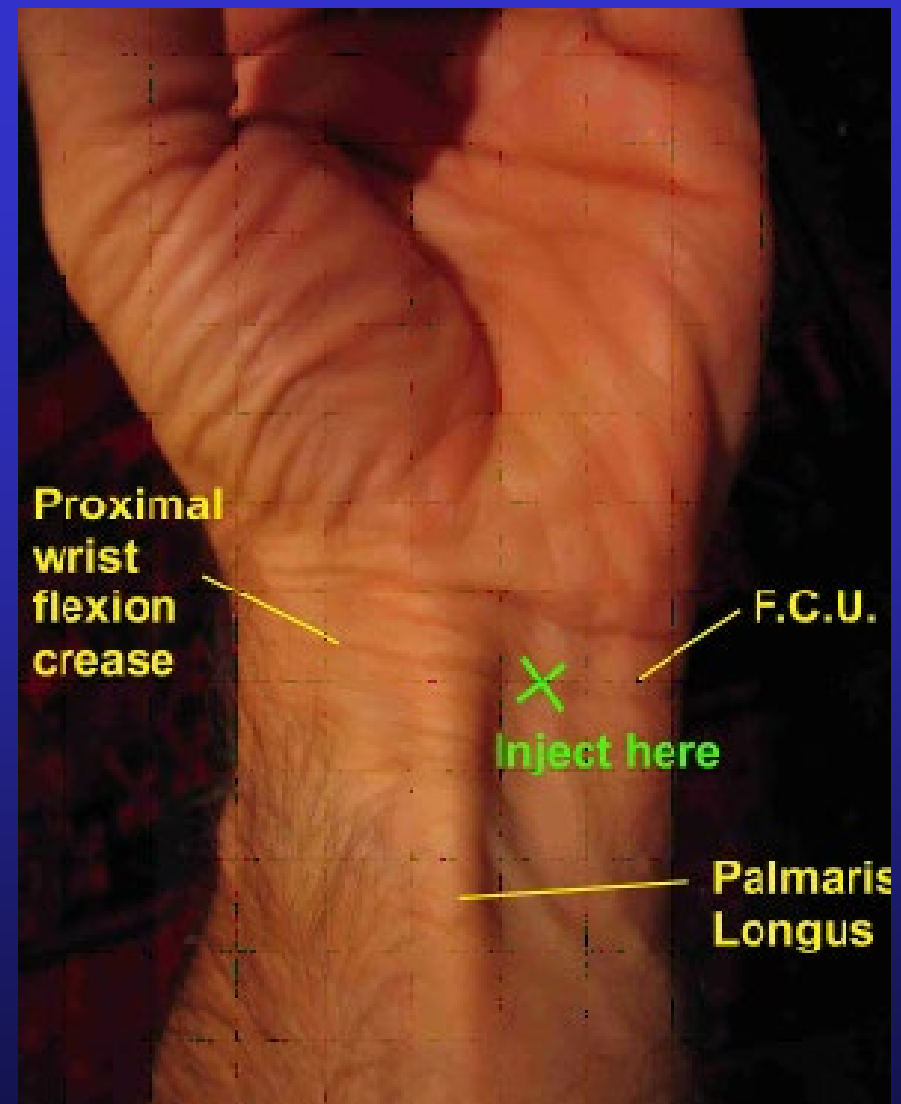
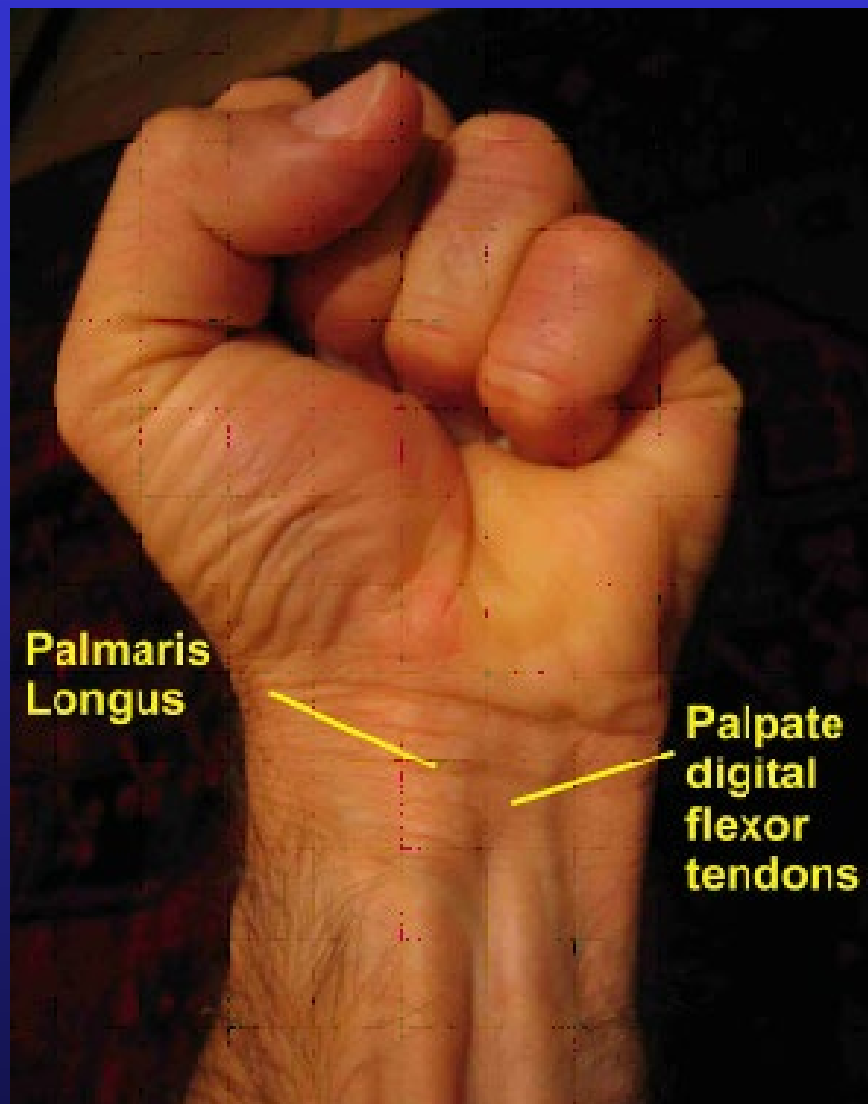


Steroid Injections

- As a test for CTS - Need and “end point” for the test
 - “It didn’t Work!!” “I still have the numbness”
- Only VARIABLE symptoms will improve – eg Waking
- Constant symptoms will take 9 – 12 months to improve
- Cortisone will not last 9 – 12 months

Steroid Injections

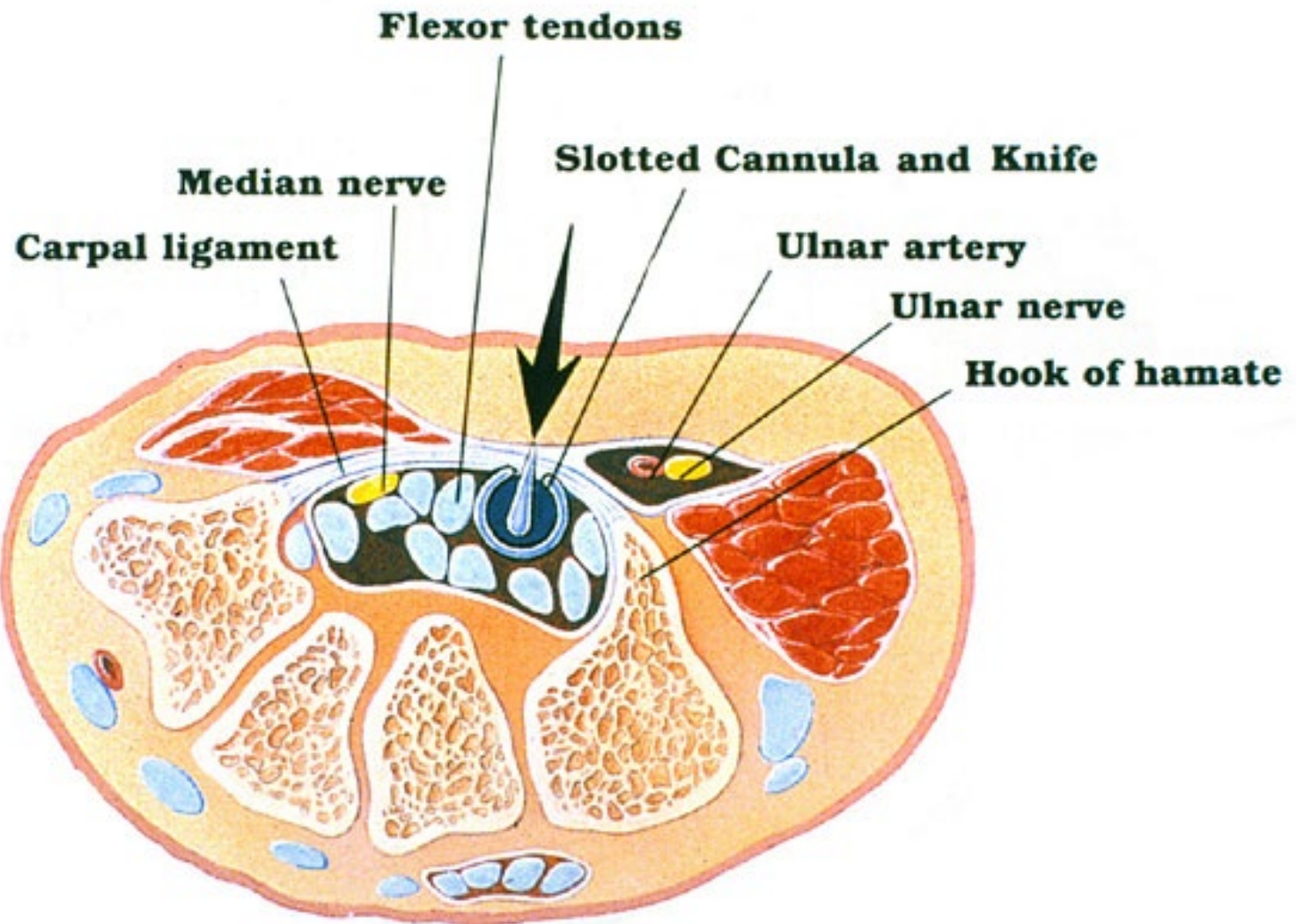
- How does it work if NOT Inflamed??
- Probably causes Synovial Atrophy
- Dye studies show if inject around flexor tendons will extend throughout CT



- Does NOT need to be put next to median nerve

Surgery - Indications

- Non-operative treatment has failed
- Symptoms are severe
- Permanent numbness or muscle wasting in the hand.
- Are we operating too late???



Need 45* Wrist D.F.

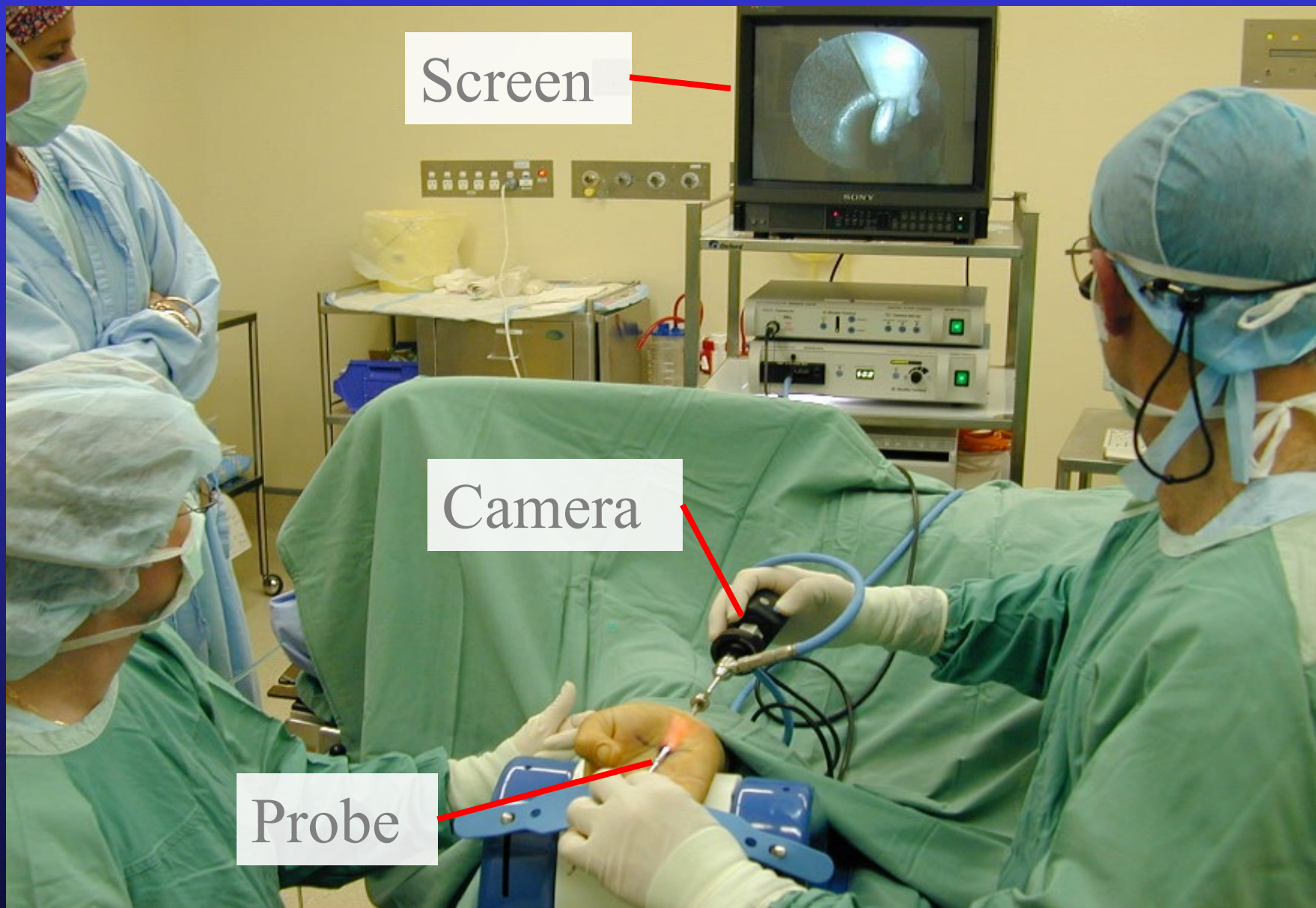


- Avoid putting strap across finger tips – apply to distal palm

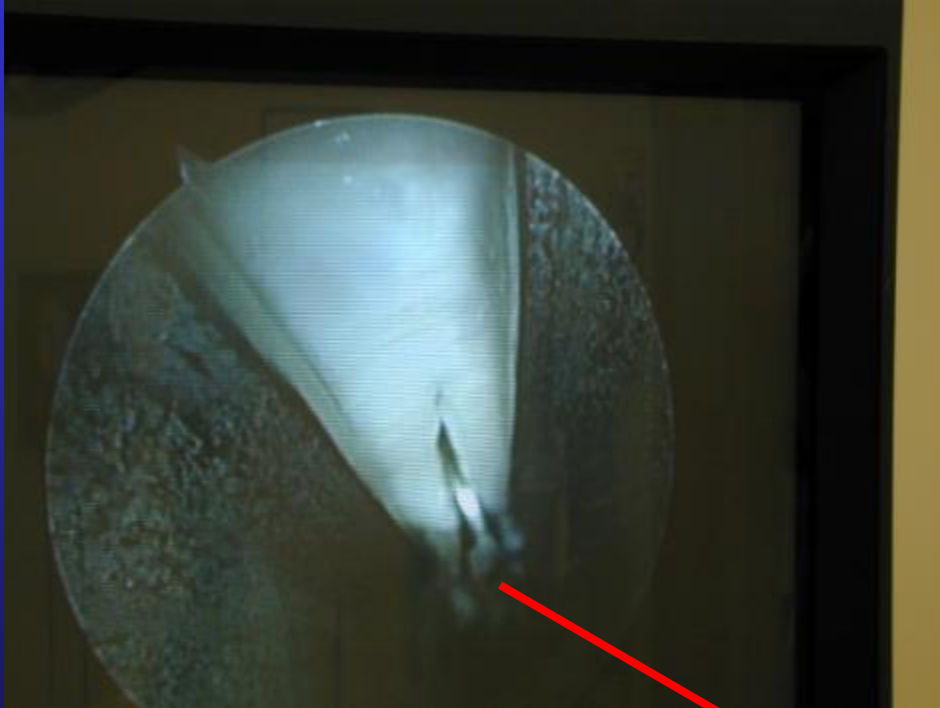
Screen

Camera

Probe



View on screen



- Under surface of retinaculum feels like rough train track when passing probe
- No longitudinal structures seen
- Knife

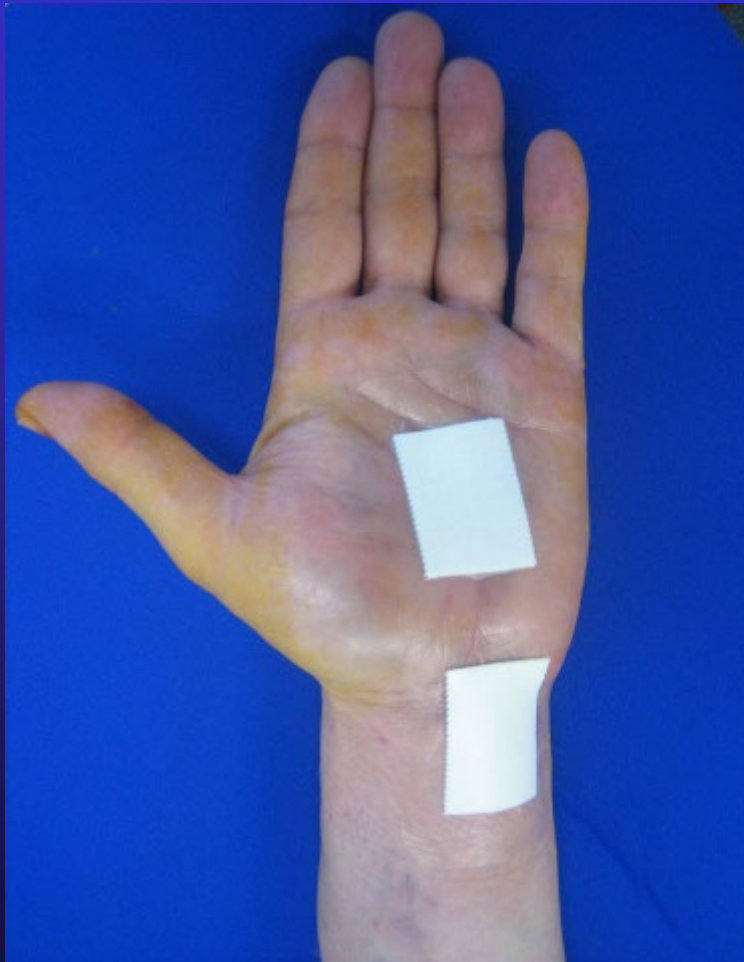
Evolution in Rx

- 1970 - 80s
- 3 days in hospital
- Plaster for 6 weeks
- REST the hand!

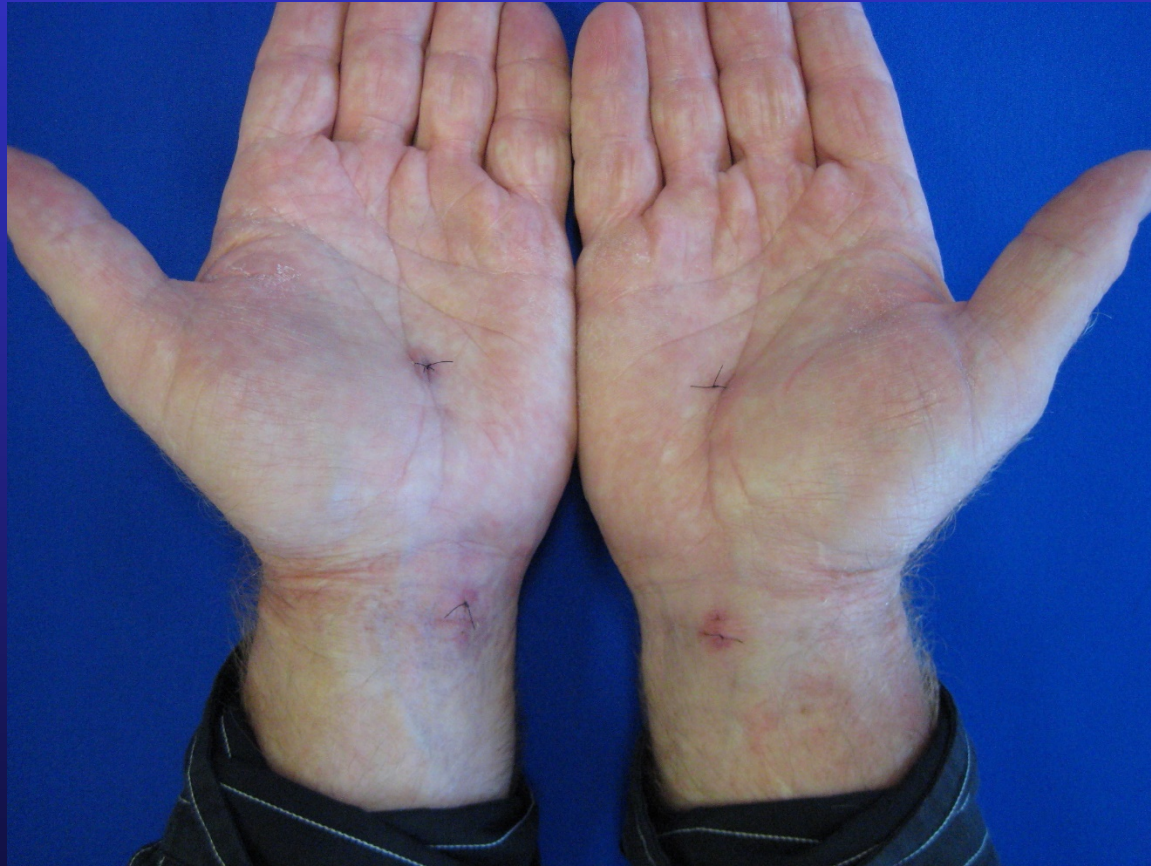
Crepe 2 days



Exercise



ECTR



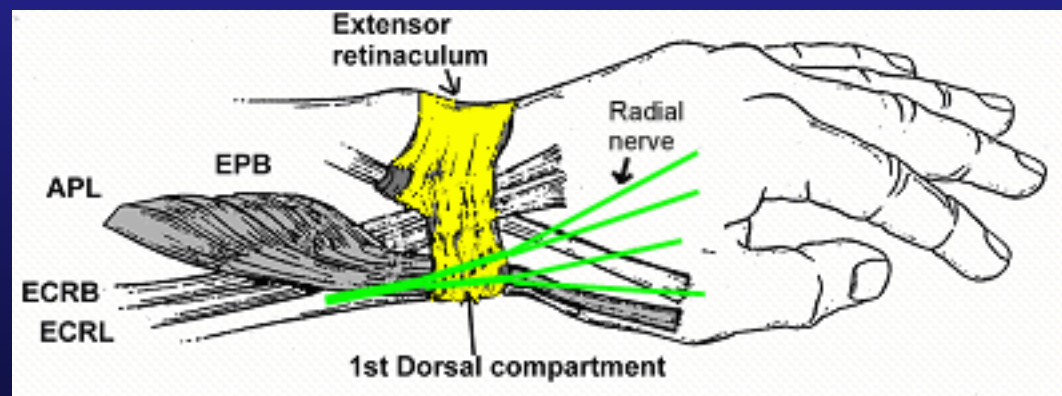
Severe CTS in Pregnancy

- Onset ~20 weeks
- Older mothers >40s
- Obese
- Gestational Diabetes – Insulin Dependant
- IVF Drugs
- May need Surgery while Pregnant



De Quervains during Pregnancy

- Need Surgery While Pregnant!!!!



“Ultrasound Guided
Injection”

=

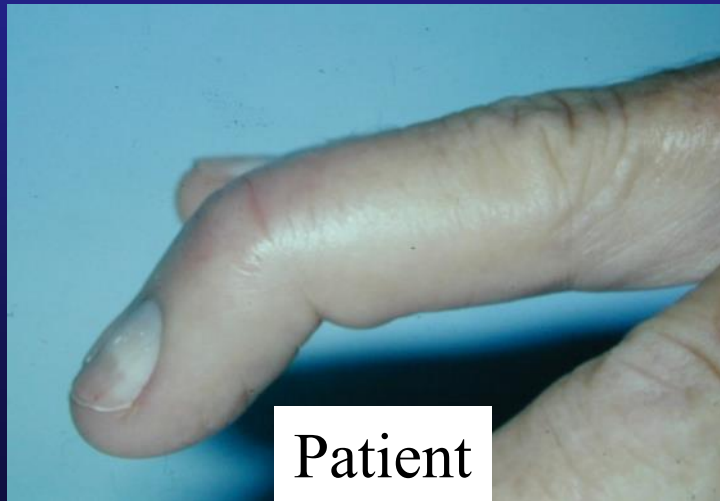
2 Ultrasounds!!!!
On Separate Days!!!!

Ultrasound PROBLEM!

Sonographer



Radiologist



Patient

“Focused high resolution ultrasound of the affected digit reveals a slightly thickened intact extensor tendon “

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The End



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